\_\_\_\_\_\_

Sequence Listing was accepted with existing errors.

See attached Validation Report.

If you need help call the Patent Electronic Business Center at (866)

217-9197 (toll free).

Reviewer: Anne Corrigan

Timestamp: Wed Jun 13 14:15:18 EDT 2007

\_\_\_\_\_

## Validated By CRFValidator v 1.0.2

Application No: 10768951 Version No: 4.1

Input Set:

Output Set:

**Started:** 2007-06-13 14:15:09.229

**Finished:** 2007-06-13 14:15:11.745

**Elapsed:** 0 hr(s) 0 min(s) 2 sec(s) 516 ms

Total Warnings: 21

Total Errors: 13

No. of SeqIDs Defined: 34

Actual SeqID Count: 34

Error code		Error Description
E	257	Invalid sequence data feature in <221> in SEQ ID (1)
E	257	Invalid sequence data feature in <221> in SEQ ID (2)
E	257	Invalid sequence data feature in <221> in SEQ ID (3)
E	257	Invalid sequence data feature in <221> in SEQ ID (4)
E	257	Invalid sequence data feature in <221> in SEQ ID (5)
E	257	Invalid sequence data feature in <221> in SEQ ID (6)
E	257	Invalid sequence data feature in <221> in SEQ ID (7)
E	257	Invalid sequence data feature in <221> in SEQ ID (8)
E	257	Invalid sequence data feature in <221> in SEQ ID (9)
E	257	Invalid sequence data feature in <221> in SEQ ID (10)
E	257	Invalid sequence data feature in <221> in SEQ ID (11)
E	257	Invalid sequence data feature in <221> in SEQ ID (12)
E	257	Invalid sequence data feature in <221> in SEQ ID (12)
W	213	Artificial or Unknown found in <213> in SEQ ID (13)
W	213	Artificial or Unknown found in <213> in SEQ ID (14)
W	213	Artificial or Unknown found in <213> in SEQ ID (15)
W	213	Artificial or Unknown found in <213> in SEQ ID (16)
W	213	Artificial or Unknown found in <213> in SEQ ID (17)
W	213	Artificial or Unknown found in <213> in SEQ ID (18)
W	213	Artificial or Unknown found in <213> in SEQ ID (19)

## Input Set:

## Output Set:

**Started:** 2007-06-13 14:15:09.229

Finished: 2007-06-13 14:15:11.745

**Elapsed:** 0 hr(s) 0 min(s) 2 sec(s) 516 ms

Total Warnings: 21

Total Errors: 13

No. of SeqIDs Defined: 34

Actual SeqID Count: 34

Error code		Error Description
W	213	Artificial or Unknown found in <213> in SEQ ID (20)
W	213	Artificial or Unknown found in <213> in SEQ ID (21)
W	213	Artificial or Unknown found in <213> in SEQ ID (22)
W	213	Artificial or Unknown found in <213> in SEQ ID (24)
W	213	Artificial or Unknown found in <213> in SEQ ID (25)
W	213	Artificial or Unknown found in <213> in SEQ ID (26)
W	213	Artificial or Unknown found in <213> in SEQ ID (27)
W	213	Artificial or Unknown found in <213> in SEQ ID (28)
W	213	Artificial or Unknown found in <213> in SEQ ID (29)
W	213	Artificial or Unknown found in <213> in SEQ ID (30)
W	213	Artificial or Unknown found in <213> in SEQ ID (31)
W	213	Artificial or Unknown found in <213> in SEQ ID (32)
W	213	Artificial or Unknown found in <213> in SEQ ID (33) This error has occured more than 20 times, will not be displayed

## SEQUENCE LISTING

<110> COUNCIL OF SCENTIFIC AND INDUSTRIAL RESEARCH Rao, Nalam M Acharya, Priyamvada <120> STABLE GENE VARIANTS OF LIPASES <130> 71914 <140> US 10/768,951 <141> 2004-01-29 <160> 34 <170> PatentIn version 3.3 <210> 1 <211> 181 <212> PRT <213> Bacillus subtilis <220> <221> AMINO ACIDS <222> (1)..(181) <223> enzyme sequence <400> 1 Met Ala Glu His Asn Pro Val Val Met Val His Gly Ile Gly Gly Ala 5 1.0 Ser Phe Asn Phe Ala Gly Ile Lys Ser Tyr Leu Val Ser Gln Gly Trp 20 25 Ser Arg Asp Lys Leu Tyr Ala Val Asp Phe Trp Asp Lys Thr Gly Thr 35 40 Asn Tyr Asn Asn Gly Pro Val Leu Ser Arg Phe Val Gln Lys Val Leu 50 55 60 Asp Glu Thr Gly Ala Lys Lys Val Asp Ile Val Ala His Ser Met Gly 75 70 65 Gly Ala Asn Thr Leu Tyr Tyr Ile Lys Asn Leu Asp Gly Gly Asn Lys 85 90 Val Ala Asn Val Val Thr Leu Gly Gly Ala Asn Arg Leu Thr Thr Gly

100 105 110

Lys Ala Leu Pro Gly Thr Asp Pro Asn Gln Lys Ile Leu Tyr Thr Ser 120 Ile Tyr Ser Ser Ala Asp Met Ile Val Met Asn Tyr Leu Ser Arg Leu 130 135 140 Asp Gly Ala Arg Asn Val Gln Ile His Gly Gly His Ile Gly Leu Leu 145 150 155 160 Tyr Ser Ser Gln Val Asn Ser Leu Ile Lys Glu Gly Leu Asn Gly Gly 165 170 175 Gly Gln Asn Thr Asn 180 <210> 2 <211> 181 <212> PRT <213> Bacillus subtilis <220> <221> Amino acid <222> (1)..(181) <223> Protein sequence <400> 2 Met Ala Glu His Asn Pro Val Val Met Val His Gly Ile Gly Gly Ala 1 5 10 15 Ser Phe Asn Phe Ala Gly Ile Lys Ser Tyr Leu Val Ser Gln Gly Trp 20 25 Ser Arg Asp Lys Leu Tyr Ala Val Asp Phe Trp Asp Lys Thr Gly Thr 35 40 45 Asn Tyr Asn Asn Gly Pro Val Leu Ser Arg Phe Val Gln Lys Val Leu 50 55 Asp Glu Thr Gly Ala Lys Lys Val Asp Ile Val Ala His Ser Met Gly 75 65 70

Gly Ala Asn Thr Leu Tyr Tyr Ile Lys Asn Leu Asp Gly Gly Asn Lys

85 90 95

Val Ala Asn Val Val Thr Leu Gly Gly Ala Asn Arg Leu Thr Thr Gly
100 105 110

Lys Ala Leu Pro Gly Thr Asp Pro Asn Gln Lys Ile Leu Tyr Thr Ser 115 120 125

Ile Tyr Ser Ser Ala Asp Met Ile Val Met Asn Tyr Leu Ser Arg Leu
130 135 140

Tyr Ser Ser Gln Val Tyr Ser Leu Ile Lys Glu Gly Leu Asn Gly Gly  $165 \hspace{1.5cm} 170 \hspace{1.5cm} 175 \hspace{1.5cm}$ 

Gly Gln Asn Thr Asn 180

<210> 3

<211> 181

<212> PRT

<213> Bacillus subtilis

<220>

<221> Amino acid

<222> (1)..(181)

<223> Protein sequence

<400> 3

Met Ala Glu His Asn Pro Val Val Met Val His Gly Ile Gly Gly Ala 1  $\phantom{\bigg|}$  5  $\phantom{\bigg|}$  10  $\phantom{\bigg|}$  15

Ser Phe Asn Phe Ala Gly Ile Lys Ser Tyr Leu Val Ser Gln Gly Trp 20 25 30

Ser Arg Asp Lys Leu Tyr Ala Val Asp Phe Trp Asp Lys Thr Gly Thr 35 40 45

Asn Tyr Asn Asn Gly Pro Val Leu Ser Arg Phe Val Gln Lys Val Leu 50 55 60

Asp Glu Thr Gly Val Lys Lys Val Asp Ile Val Ala His Ser Met Gly 65 70 75 80

Gly Ala Asn Thr Leu Tyr Tyr Ile Lys Asn Leu Asp Gly Gly Asn Lys 90 Val Ala Asn Val Val Thr Leu Gly Gly Ala Asn Arg Leu Thr Thr Gly 100 105 110 Lys Ala Leu Pro Gly Thr Asp Pro Asn Gln Lys Ile Leu Tyr Thr Ser 115 120 125 Ile Tyr Ser Ser Asp Asp Met Ile Val Met Asn Tyr Leu Ser Arg Leu 130 135 140 Asp Gly Ala Arg Asn Val Gln Ile His Gly Gly His Ile Gly Leu Leu 150 155 Tyr Ser Ser Gln Val Tyr Ser Leu Ile Lys Glu Gly Leu Asn Gly Gly 165 170 175 Gly Gln Asn Thr Asn 180 <210> 4 <211> 181 <212> PRT <213> Bacillus subtilis <220>

<220>
<221> Amino acid
<222> (1)..(181)
<223> Protein Sequence

<400> 4

Met Ala Glu His Asn Pro Val Val Met Val His Gly Ile Gly Gly Ala 1  $\phantom{\bigg|}$  5  $\phantom{\bigg|}$  10  $\phantom{\bigg|}$  15

Ser Phe Asn Phe Ala Gly Ile Lys Ser Tyr Leu Val Ser Gln Gly Trp
20 25 30

Ser Arg Asp Lys Leu Tyr Ala Val Asp Phe Trp Asp Lys Thr Gly Thr 35 40 45

Asn Tyr Asn Asn Gly Pro Val Leu Ser Arg Phe Val Gln Lys Val Leu 50 55 60

Asp Glu Thr Gly Thr Lys Lys Val Asp Ile Val Ala His Ser Met Gly 70 Gly Ala Asn Thr Leu Tyr Tyr Ile Lys Asn Leu Asp Gly Gly Asn Lys 85 90 95 Val Ala Asn Val Val Thr Leu Gly Gly Ala Asn Arg Leu Thr Thr Gly 100 105 110 Lys Ala Pro Pro Gly Thr Asp Pro Asn Gln Lys Ile Leu Tyr Thr Ser 115 120 Ile Tyr Ser Ser Ala Asp Met Ile Val Met Asn Tyr Leu Ser Arg Leu 135 Asp Gly Ala Arg Asn Val Gln Ile His Gly Gly His Ile Gly Leu Leu 145 150 155 160 Tyr Ser Ser Gln Val Tyr Ser Leu Ile Lys Glu Gly Leu Asn Gly Gly 175 170 165 Gly Gln Asn Thr Asn 180 <210> 5 <211> 181 <212> PRT <213> Bacillus subtilis <220> <221> Amino acid <222> (1)..(181) <223> Protein Sequence <400> 5 Met Ala Glu His Asn Pro Val Val Met Val His Gly Ile Gly Gly Ala 10 Ser Phe Asn Phe Ala Gly Ile Lys Ser Tyr Leu Val Ser Gln Gly Trp 25 20 30

Ser Arg Asp Lys Leu Tyr Ala Val Asp Phe Trp Asp Lys Thr Gly Thr 35 40 45

Asn Tyr Asn Asn Gly Pro Val Leu Ser Arg Phe Val Gln Lys Val Le 50 55 60	·u
Asp Glu Thr Gly Ala Lys Lys Val Asp Ile Val Ala His Ser Met Gl 65 70 75 80	_
Gly Ala Asn Thr Leu Tyr Tyr Ile Lys Asn Leu Asp Gly Gly Asn Ly 85 90 95	's
Val Ala Asn Val Val Thr Leu Gly Gly Ala Asn Arg Leu Thr Thr Gl	·Y
Lys Ala Leu Pro Gly Thr Asp Pro Asn Gln Lys Ile Leu Tyr Thr Se 115 120 125	r
Ile Tyr Ser Ser Asp Asp Met Ile Val Met Asn Tyr Leu Ser Arg Le 130 135 140	·u
Asp Gly Ala Arg Asn Val Gln Ile His Gly Gly His Ile Gly Leu Le 145 150 155 16	
Tyr Ser Ser Gln Val Tyr Ser Leu Ile Lys Glu Gly Leu Asn Gly Gl 165 170 175	·Y
Gly Gln Asn Thr Asn 180	
<210> 6 <211> 181 <212> PRT <213> Bacillus subtilis	
<220> <221> Amino acid <222> (1)(181) <223> Protein sequence	
<400> 6	
Met Ala Glu His Asn Pro Val Val Met Val His Gly Ile Gly Gly Al  1 5 10 15	.a

Ser Phe Asn Phe Ala Gly Ile Lys Ser Tyr Leu Val Ser Gln Gly Trp 20 25 30

Ser Arg Asp Lys Leu Tyr Ala Val Asp Phe Trp Asp Lys Thr Gly Thr Asn Tyr Asn Asn Gly Pro Val Leu Ser Arg Phe Val Gln Lys Val Leu 50 55 60 Asp Glu Thr Gly Ala Lys Lys Val Asp Ile Val Ala His Ser Met Gly 70 75 80 Gly Ala Asn Thr Leu Tyr Tyr Ile Lys Asn Leu Asp Gly Gly Asn Lys 85 90 Val Ala Asn Val Val Thr Leu Gly Gly Ala Asn Arg Leu Thr Thr Gly 105 110 Lys Ala Pro Pro Gly Thr Asp Pro Asn Gln Lys Ile Leu Tyr Thr Ser 115 120 125 Ile Tyr Ser Ser Asp Asp Met Ile Val Met Asn Tyr Leu Ser Arg Leu 135 140 130 Asp Gly Ala Arg Asn Val Gln Ile His Gly Gly His Ile Gly Leu Leu 145 150 155 160 Tyr Ser Ser Gln Val Tyr Ser Leu Ile Lys Glu Gly Leu Asn Gly Gly 165 170 175 Gly Gln Asn Thr Asn 180 <210> 7 <211> 181 <212> PRT <213> Bacillus subtilis <220> <221> Amino acid <222> (1)..(181) <223> Protein sequence <400> 7 Met Ala Glu His Asn Pro Val Val Met Val His Gly Ile Gly Gly Ala

Ser Phe Asn Phe Ala Gly Ile Lys Ser Tyr Leu Val Ser Gln Gly Trp Ser Arg Asp Lys Leu Tyr Ala Val Asp Phe Trp Asp Lys Thr Gly Thr 35 40 45 Asn Tyr Asn Asn Gly Pro Val Leu Ser Arg Phe Val Gln Lys Val Leu 50 55 60 Asp Glu Thr Gly Ala Lys Lys Val Asp Ile Val Ala His Ser Met Gly 70 75 Gly Ala Asn Thr Leu Tyr Tyr Ile Lys Asn Leu Asp Gly Gly Asn Lys Val Ala Asn Val Val Thr Leu Gly Gly Ala Asn Arg Leu Thr Thr Gly 100 105 110 Lys Ala Leu Pro Gly Thr Asp Pro Asn Gln Lys Ile Leu Tyr Thr Ser 120 125 115 Ile Tyr Ser Ser Ala Asp Met Ile Val Met Asn Tyr Leu Ser Arg Leu 130 135 140 Asp Gly Ala Ser Asn Val Gln Ile His Gly Gly His Ile Gly Leu Leu 145 150 155 160

Tyr Ser Ser Gln Val Tyr Ser Leu Ile Lys Glu Gly Leu Asn Gly Gly  $165 \hspace{1.5cm} 170 \hspace{1.5cm} 175$ 

Gly Gln Asn Thr Asn 180

<210> 8 <211> 181 <212> PRT

<213> Bacillus subtilis

<220>

<221> Amino acid

<222> (1)..(181)

<223> Protein sequence

Met Ala Glu His Asn Pro Val Val Met Val His Gly Ile Gly Gly Ala Ser Phe Asn Phe Ala Gly Ile Lys Ser Tyr Leu Val Ser Gln Gly Trp 20 25 30 Ser Arg Asp Lys Leu Tyr Ala Val Asp Phe Trp Asp Lys Thr Gly Thr 35 40 45 Asn Tyr Asn Asn Gly Pro Val Leu Ser Arg Phe Val Gln Lys Val Leu 55 60 Asp Glu Thr Gly Ala Lys Lys Val Asp Ile Val Ala His Ser Met Gly 70 75 80 Gly Ala Asn Thr Leu Tyr Tyr Ile Lys Asn Leu Asp Gly Gly Asn Lys Val Ala Asn Val Val Thr Leu Gly Gly Ala Asn Arg Leu Thr Thr Gly 110 100 105 Lys Ala Pro Pro Gly Thr Asp Pro Asn Gln Lys Ile Leu Tyr Thr Ser 115 120 125 Ile Tyr Ser Ser Ala Asp Met Ile Val Met Asn Tyr Leu Ser Arg Leu 130 135 140 Asp Gly Ala Arg Asn Val Gln Ile His Gly Gly His Ile Gly Leu Leu 145 150 155 160 Tyr Ser Ser Gln Val Tyr Ser Leu Ile Lys Glu Gly Leu Asn Gly Gly

165 170 175

Gly Gln Asn Thr Asn 180

<210> 9 <211> 181 <212> PRT

<213> Bacillus subtilis

<220>

<221> Amino acid

<222> (1)..(181)

<223> Portein Sequence

<400> 9

Met Ala Glu His Asn Pro Val Val Met Val His Gly Ile Gly Gly Ala 1  $\phantom{\bigg|}5\phantom{\bigg|}\phantom{\bigg|}\phantom{\bigg|}10\phantom{\bigg|}\phantom{\bigg|}\phantom{\bigg|}\phantom{\bigg|}15\phantom{\bigg|}\phantom{\bigg|}$ 

Ser Phe Asn Phe Ala Gly Ile Lys Ser Tyr Leu Val Ser Gln Gly Trp 20 25 30

Ser Arg Asp Lys Leu Tyr Ala Val Asp Phe Trp Asp Lys Thr Gly Thr 35 40 45

Asn Tyr Asn Asn Gly Pro Val Leu Ser Arg Phe Val Gln Lys Val Leu 50 55 60

Asp Glu Thr Gly Ala Lys Lys Ala Asp Ile Val Ala His Ser Met Gly 65 70 75 80

Gly Ala Asn Thr Leu Tyr Tyr Ile Lys Asn Leu Asp Gly Gly Asn Lys 85 90 95

Val Ala Asn Val Val Thr Leu Gly Gly Ala Asn Arg Leu Thr Thr Gly 100 105 110

Lys Ala Leu Pro Gly Thr Asp Pro Asn Gln Lys Ile Leu Tyr Thr Ser 115 120 125

Ile Tyr Ser Ser Ala Asp Met Ile Val Met Asn Tyr Leu Ser Arg Leu 130 135 140

Tyr Ser Ser Gln Val Tyr Ser Leu Ile Lys Glu Gly Leu Asn Gly Gly 165 170 175

Gly Gln Asn Thr Asn 180

<210> 10

<211> 181

<212> PRT

<213> Bacillus subtilis

<220>

<221> Amino acid

<222> (1)..(181)

<223> Protein Sequence

<400> 10

Met Ala Glu His Asn Pro Val Val Met Val His Gly Ile Gly Ala 1 5 10 15

Ser Phe Asn Phe Ala Gly Ile Lys Ser Tyr Leu Val Ser Gln Gly Trp 20 25 30

Ser Arg Asp Lys Leu Tyr Ala Val Asp Phe Trp Asp Lys Thr Gly Thr 35 40 45

Asn Tyr Asn Asn Gly Pro Val Leu Ser Arg Phe Val Gln Lys Val Leu 50 55 60

Asp Glu Thr Gly Ala Lys Lys Val Asp Ile Val Ala His Ser Met Gly 65 70 75 80

Gly Ala Asn Thr Leu Tyr Tyr Ile Lys Asn Leu Asp Gly Gly Asn Lys
85 90 95

Val Ala Asn Val Val Thr Leu Gly Gly Ala Asn Arg Leu Thr Thr Gly 100 105 110

Lys Ala Leu Pro Gly Thr Asp Pro Asn Gln Lys Ile Leu Tyr Thr Ser 115 120 125

Ile Tyr Ser Ser Ala Asp Met Ile Val Met Asn Tyr Leu Ser Arg Leu 130 135 140

Tyr Ser Ser Gln Val Tyr Ser Leu Ile Lys Glu Gly Leu Asn Gly Gly
165 170 175

Gly Gln Asn Thr Asn

```
<210> 11
<211> 181
<212> PRT
<213> Bacillus subtilis

<220>
<221> Amino acid
<222> (1)..(181)
<223> Protein sequence
```

<400> 11

Met Ala Glu His Asn Pro Val Val Met Val His Gly Ile Gly Gly Ala 1  $\phantom{\bigg|}$  5  $\phantom{\bigg|}$  10  $\phantom{\bigg|}$  15

Ser Phe Asn Phe Ala Gly Ile Lys Ser Tyr Leu Val Ser Gln Gly Trp 20 25 30

Ser Arg Asp Lys Leu Tyr Ala Val Asp Phe Trp Asp Lys Thr Gly Thr